



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Kyofumi Takeuchi, et al.

Filing Date: March 20, 2001

Application No.: 09/787,614

Group Art Unit: 1756

Examiner: Wu, Shean Chiu

Title: NEMATIC LIQUID CRYSTAL COMPOSITION AND LIQUID  
CRYSTAL DISPLAY DEVICE USING THE SAME

DECLARATION PURSUANT TO 37 C.F.R. 1.132

Commissioner for Patents

Washington, D.C. 20231

Sir:

I, Kyofumi Takeuchi, residing in Tokyo, Japan, declare and state that

1. I graduated from Master's Courses of Engineering of Nagoya University in March 1980. Since April 1980, I have been employed by DAINIPPON INK AND CHEMICALS, INC, and have been engaged in research on liquid crystal areas.

2. I am one of the inventors of the invention as claimed in the above-referenced application, and accordingly, I am familiar with the specification and claims which comprise that application.

3. I am aware of the Office Action of July 1, 2004, issued on the above-referenced application, in which Claims 1-4 and 14-18 were rejected under 35 U.S.C. 103(a) as being unpatentable over Gray et al. (US 5,252,253).

4. As is described in this Declaration, I conducted experiments for the purpose of demonstrating that the unexpected effect can be obtained by combining two or more general formulas selected from the general formulas (I-1) to (I-5) in instant claim 1 of the present invention as shown in Table 1.

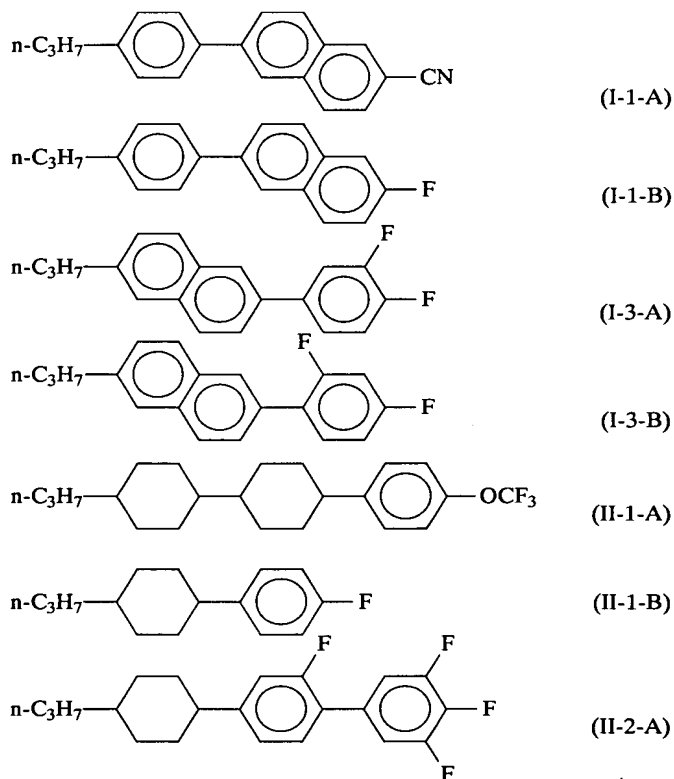


Table 1

		Additional Example	Comparative Additional Example 1	Comparative Additional Example 2
Composition	(I-1-A)	-	20%	20%
	(I-1-B)	20%	-	-
	(I-3-A)	20%	20%	-
	(I-3-B)	-	-	20%
	(II-1-A)	20%	20%	20%
	(II-1-B)	20%	20%	20%
	(II-2-A)	20%	20%	20%
$T_{N-I}$ (°C)		56.0	62.4	65.2
$\Delta n$		0.141	0.151	0.153
Specific resistance (Ω·cm)		$2.1 \times 10^{14}$	$1.8 \times 10^{10}$	$3.0 \times 10^{10}$
VHR (%)		99.8	49.2	53.7

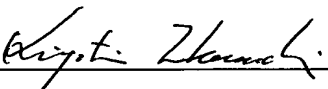
VHR: voltage holding ratio

From these results, the liquid crystal composition of the present invention excluding the compound having cyanonaphthalene (I-1-A) indicated substantially better specific resistance and VHR than compositions including the compound having

cyanonaphthalene (I-1-A).

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: Aug. 25, 2004

  
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Kyofumi Takeuchi